

REMARKS

Applicants respectfully request reconsideration and allowance of the present application based on the foregoing amendments and the following remarks. By this amendment, Claims 1 and 10 have been amended and new claims 19-22 have been added. Upon entry of this amendment, Claims 1-22 will be pending in the application, with claims 8-9 and 12-18 having been withdrawn from consideration.

Claim Rejections Under 35 U.S.C. 112 (Second Paragraph)

Claims 1-7 and 10-11 stand rejected under 35 U.S.C. 112 second paragraph as being indefinite. In particular, the Office Action objected to the phrase including “predetermined order” in claims 1 and 10. Although Applicants respectfully disagree with the basis for this rejection, the phrase has been deleted from the claims, thereby rendering the rejection moot. Accordingly, the rejection should be withdrawn.

Claim Rejections under 35 USC § 103

Claims 1-7 and 10-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,263,299 to Aleshin et al. (“Aleshin”) in view of U.S. Patent Pub. No. 2002/0062206 to Liebchen (“Liebchen”). For reasons more fully set forth below, this rejection is respectfully traversed.

Independent claims 1 and 10 require, inter alia:

representing at least one resolvable feature of a mask to be printed on the substrate by at least one impulse function; and
creating an interference map based on the at least one impulse function and the TCC function, wherein the interference map represents the at least one resolvable feature to be printed on the substrate and areas of destructive interference.

Applicants respectfully submit that Aleshin and Liebchen, even assuming, arguendo, one skilled in the art would combine them as alleged in the Office Action, would not have suggested each and every limitation of the independent claims.

The Office Action relies solely on Aleshin as disclosing the above subject matter, so the following remarks will be directed at Aleshin.

Aleshin simulates an aerial image produced by a mask having transmissive portions by dividing the transmissive portions into primitive elements, obtaining a response for each of the primitive elements, and then simulating the aerial image by combining the responses over all of the primitive elements. (see Abstract) In particular, Aleshin divides transmissive portions into a plurality of smaller rectangular and triangular shapes, and these shapes correspond to the primitive elements.

As for the claimed “representing” step, it appears the Office Action is equating either or both of Aleshin’s “transmissive portions” or “primitive elements” to the claimed resolvable feature. However, nowhere does Aleshin teach or suggest representing these “transmissive portions” or “primitive elements” as impulse functions as required by the claims. The Office Action points to column 5, lines 5-18 of Aleshin, which merely describes how Hopkins analysis includes a transfer function describing how a point source in a mask plane is imaged onto a plane of the resist. It speaks nothing of how to represent a resolvable feature in a mask, much less using an impulse function as required the claims. The Office Action also points to column 14, lines 51-55 of Aleshin, which merely describes the process of dividing the transmissive portions into primitive elements. As mentioned earlier, the primitive elements are a plurality of smaller rectangles and triangles. They are not impulse functions.

Aleshin does not explicitly disclose or suggest anything about the claimed step of creating an interference map that, among other things, represents “areas of destructive interference” either. Indeed, the Office Action correctly fails to identify any such teaching. If the Office Action was relying on an unspecified theory of inherency, such reliance would be wrong. There is no certainty that Aleshin’s simulated aerial image would represent areas of destructive interference as would be required by such a theory, and Aleshin is totally silent regarding interference areas or effects.

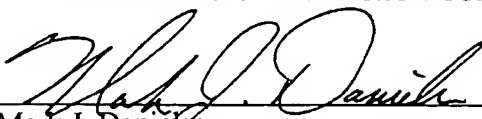
For at least these reasons, independent claims 1 and 10 patentably define over the cited prior art, and the 103 rejection of the claims should be withdrawn.

Conclusion

All objections and rejections having been addressed, it is believed that the claims are in condition for allowance, and Notice to that effect is earnestly solicited. If any issues remain which the Examiner feels may be resolved through a telephone interview, s/he is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,
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